



Gear motor with articulated arm for swing gates

ALPHEO

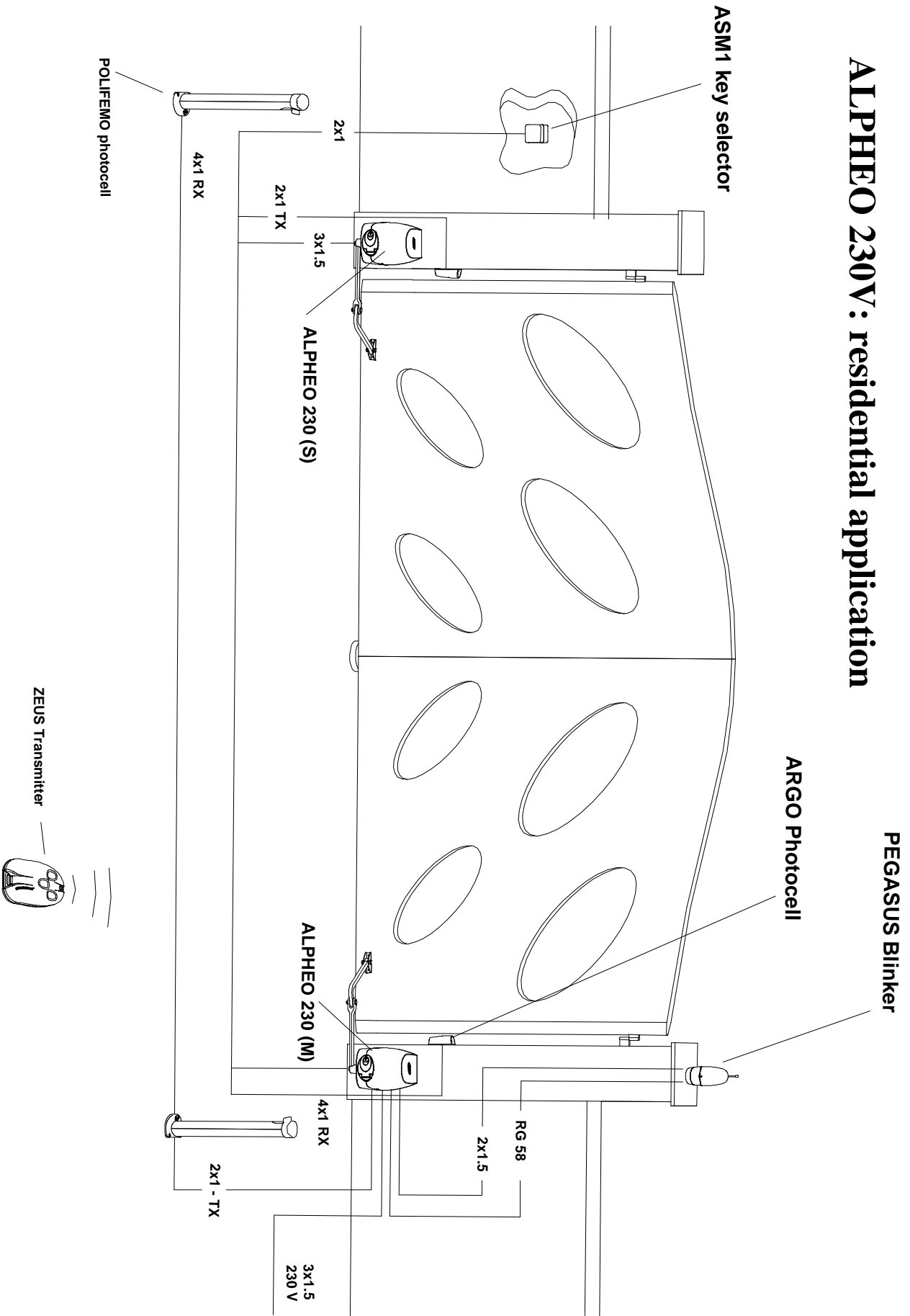
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Attention!

- This manual is for qualified technical personnel only for installation purposes and not intended for the end user; it's the installer's job to explain to the user how the automatism works, about possible hazards related to it and about the need for periodical maintenance.
- The automatism must be installed by qualified personnel only, observing current standards concerning automatic closing systems. More specifically, installation conformity calls for observance of directive 89/392 and standards EN 12453 and EN 12445.
- As ALPHEO is made specifically to control swing gates it is forbidden to use the product for different purposes or improperly.
- Use original components only. Stagnoli is not liable for damages if other components are used.
- Make certain that the gate structure is solid and suitable for being motor-driven.
- When the gate is moving make sure there are no points of friction and there is no chance of it derailing.
- Make absolutely certain the power is disconnected before carrying out any work on the device.
- Connect the power lead to supply lines with adequate electrical protection only; install a device to guarantee disconnection of all the phases from the mains that has a distance of at least 3.5 mm between the contacts.
- Pay particular attention when deciding which safety devices to install and their location. Always install an emergency stop device that will cut power off in the case of necessity.
- Only qualified personnel must be allowed to service the unit and access the internal parts of the geared motor.
- Irreversibility of the geared motors means an electric lock does not have to be installed and, in the case of black-out the release device (protected by a personalised key) lets you open the gate by hand. We do however recommend using an electric lock to ensure correct closing especially if the swing gates are longer than 2.5 metres.

ALPHEO 230V: residential application



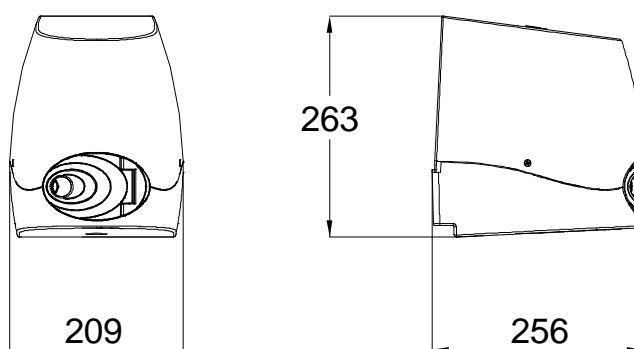
ALPEHO technical specifications

| Technical data | ALPEHO 230 | ALPEHO 24 |
|---------------------------------|---------------|----------------|
| Supply | 230V~ (50 Hz) | 230V~ (50 Hz) |
| Max. current requirement (A) | 1.3 | 1 |
| Motor supply | 230V~ | 24V <u>---</u> |
| Max. motor power (W) | 160 W | 120 W |
| Capacitor | 10 μ F | - |
| 90° Travel time (sec) | 15 - 20 | 15 - 20 |
| Torque | 180 Nm | 180 Nm |
| Working temperature (°C) | -20 ... +60 | -20 ...+60 |
| Thermal overload protection(°C) | 150 | - |
| Work cycle (%) | 30 | 70 |
| IP protection level | 44 | 44 |
| Weight* (Kg) | 9 | 10 |

Utilisation limits

| Leaf | 1 m | 1.5 m | 2 m | 2.3 m |
|--------|-----|-------|-----|-------|
| 300 kg | • | | | |
| 250 kg | • | • | | |
| 225 kg | • | • | • | |
| 200 kg | • | • | • | • |

Overall dimensions



Preliminary checks

Check the following points before starting to install Alpheo:

- Check that the gate structure is sufficiently sturdy and there are no points of friction.
- Check the condition of the gate hinges and make sure they are adequately lubricated.
- Make sure there is a mechanical stop in closing to prevent the gate going beyond its travel;

Fixing the brackets to the post and gate (Figures 1 and 2)

After having verified the optimum conditions for installation, fix the Base Plate to the post using 14 \varnothing plugs and M8 screws, observing the minimum distance of 100 mm from the ground. Lock the fastening plate to the gate with M6 screws, observing the values indicated and those specified in table 1.

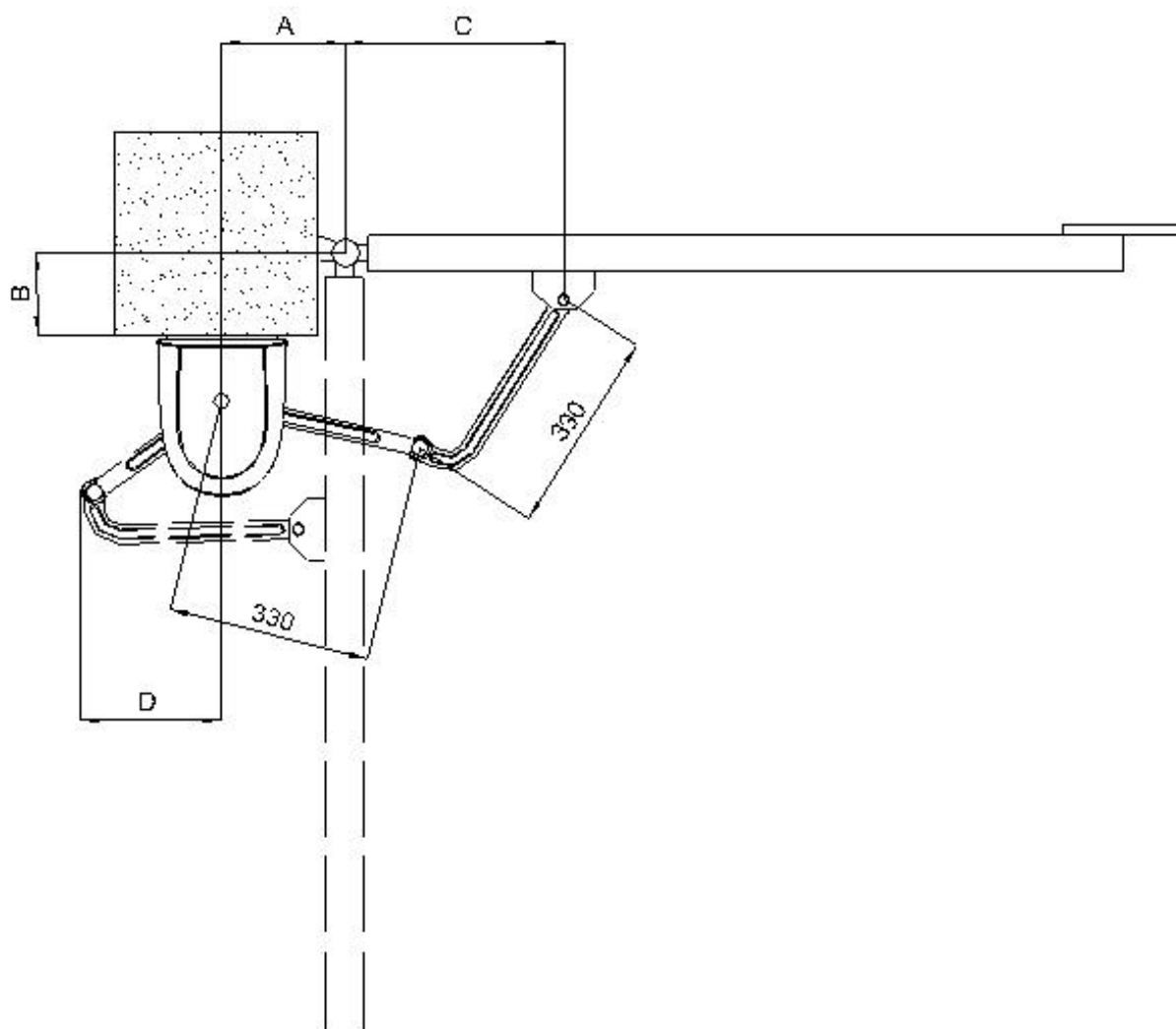


Figure 1

| OPENING | A | B | C | D |
|---------|-----------|-----|-----|---------|
| 90° | 155 ÷ 210 | 0 | 430 | 230 max |
| 90° | 155 ÷ 210 | 50 | 430 | 230 max |
| 90° | 155 ÷ 210 | 75 | 430 | 230 max |
| 90° | 155 ÷ 210 | 100 | 430 | 230 max |
| 90° | 155 ÷ 210 | 125 | 430 | 230 max |
| 90° | 155 ÷ 210 | 150 | 400 | 230 max |
| 90° | 155 ÷ 210 | 175 | 400 | 230 max |
| 90° | 155 ÷ 210 | 200 | 400 | 230 max |
| 105° | 190 ÷ 210 | 0 | 430 | 230 max |
| 105° | 200 | 30 | 430 | 230 max |

Table 1

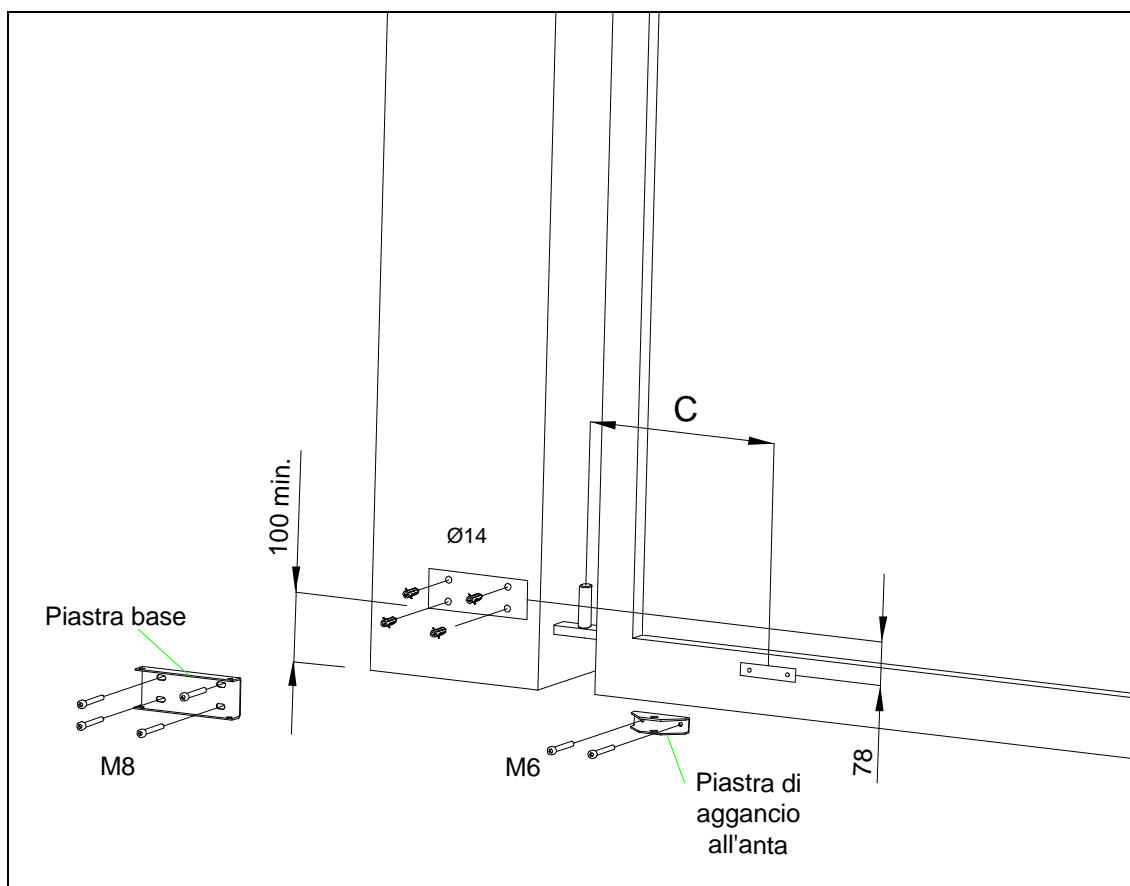


Figure 2

Fixing the geared motor

Unscrew the 4.2x9.5 screws and remove the cover (Fig. 3).

Fit the geared motor on the base plate by the holes and lock it in place with the M8x90 screws and nuts (Fig. 4).

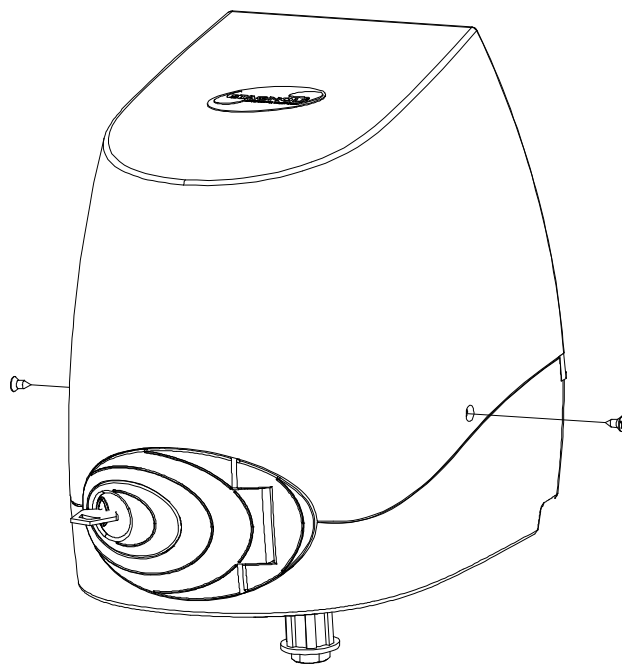


Figure 3

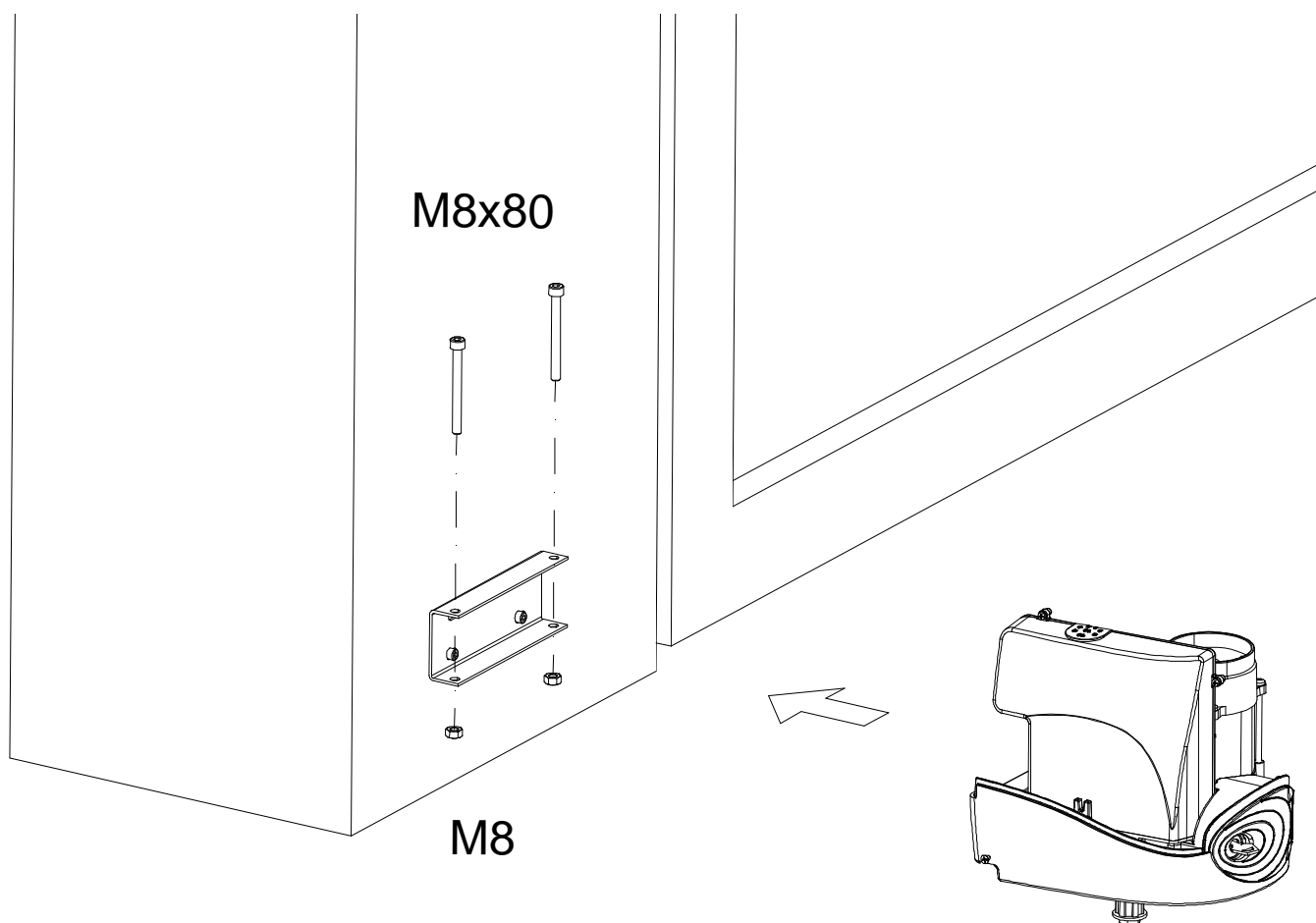


Figure 4

Mounting the articulated arm (Figures 5, 6, 7)

1. the arm must be put in straight by the keyed shaft; position the 11 Ø x30 washer and lock the arm with the M10x28 screw.
2. Take the curved arm and fit it in the straight arm's fork; fit the three bushings and the pin and fasten with the 4Øx24 pin.
3. Release the geared motor by turning the key clockwise, opening the door 90° and pulling the release knob.
4. Fit the bushing on the other end and lock the curved arm to the gate bracket with the M12x40 screw and M12 nut.

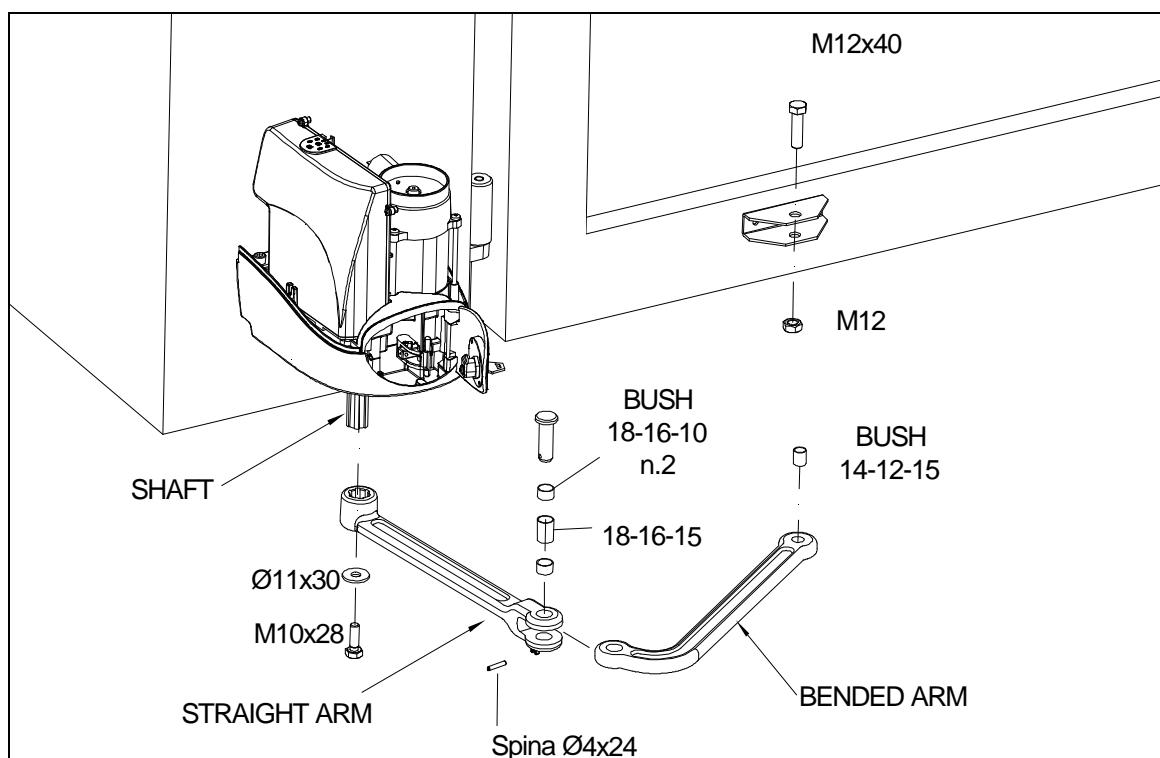


Figure 5

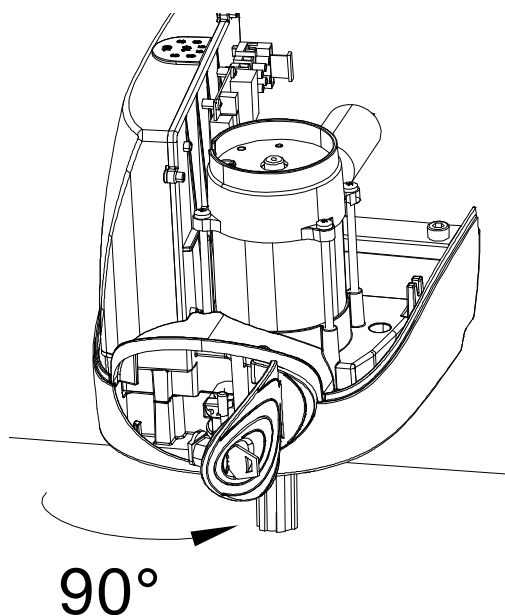


Figure 6

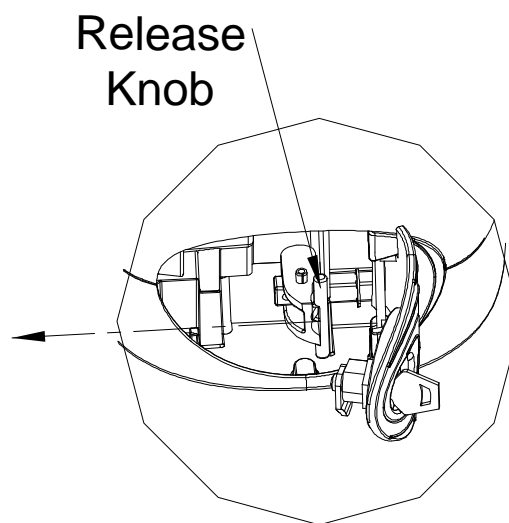


Figure 7

Control board for electromechanical gearmotors

ALPHEO 24V

Rev. 0 - 11/05



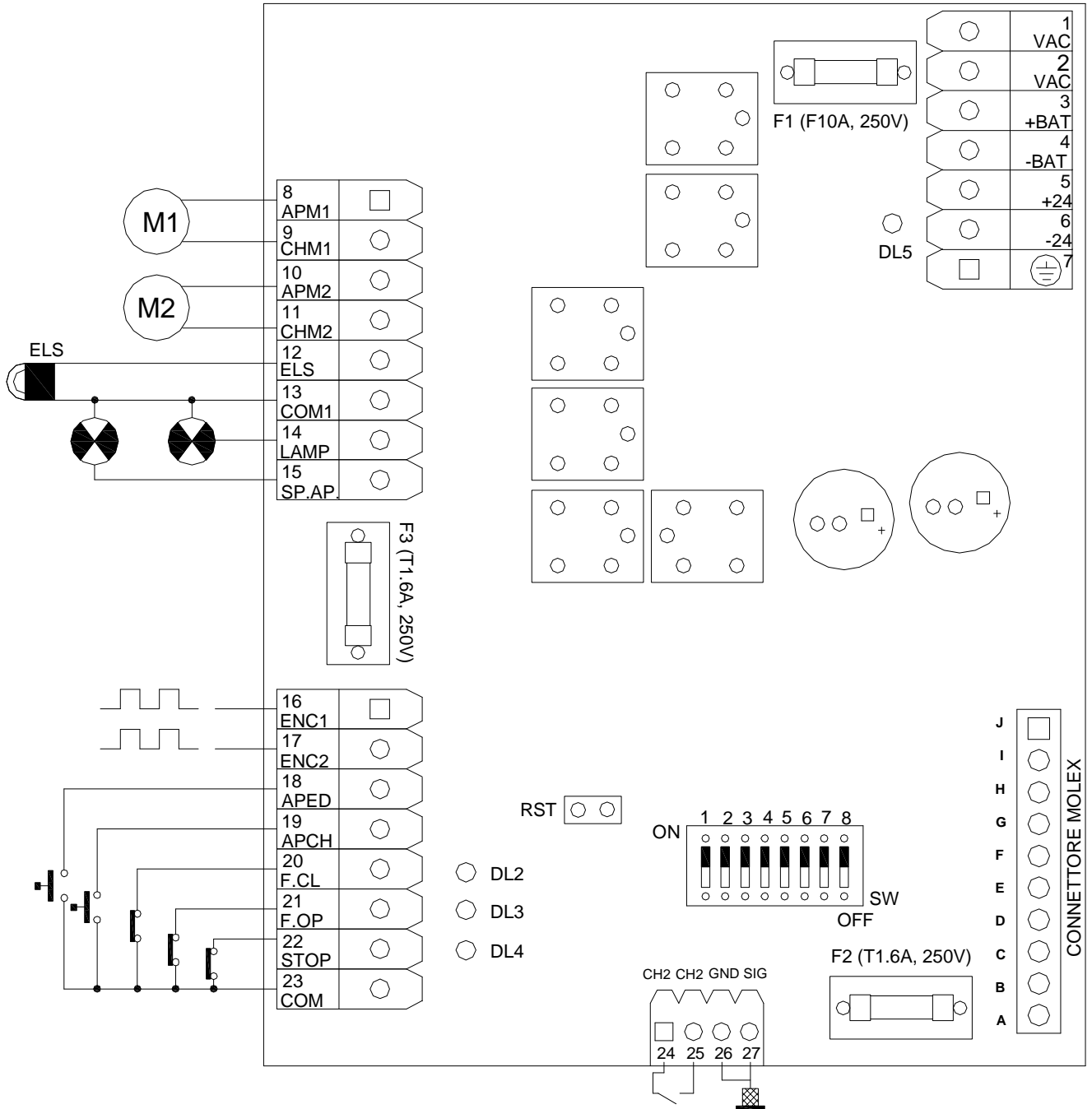


ATTENTION !

- The present user manual is designed for personnel skilled in installation, not for the final user; the electrician is then due to inform the user about modes of use of the device, possible danger and about the necessity to apply periodical maintenance.
- The installation can be carried out only by skilled personnel and in compliance with the rules currently in force regarding the automated locks. In particular, the installation requires the following of the regulations 89/392 and norm EN 12453 and EN 12445..
- Use only original parts. Stagnoli do not take any responsibility for damage caused by using unoriginal parts.
- Before operating the device, make sure that the power supply has been cut off.
- The feeding cable can be connected only with feeders supplied with proper electric protection. In particular, make sure that the distance between the contacts is of at least 3.5 mm in order to avoid omnipolar disconnection from the grid.
- Take into consideration the safety devices to be installed and the place where they should be positioned. Always have an emergency stop device available to allow proper detachment of the feeding cable.
- Do not operate the machine with wet or damp hands or feet and avoid exposing the machine to atmospheric conditions.
- The device should be used only according to the purpose that it has been designed for, any other use is to be considered as improper and therefore dangerous.
- Maintenance, including possible replacement of courtesy light unit , can be carried out only by skilled staff.
- Safety units should be checked periodically.

TECHNICAL SPECIFICATION AND CONNECTION DIAGRAM

The electronic control unit for 24V electromechanical gear motors of Stagnoli, is designed for controlling operations of 24 Vdc motors, used for the activation of gates with 1 or 2 leaves; the movement is controlled by the encoder and there is no need to use limit switches.



ELECTRIC CONNECTIONS

1. Neutral power supply from transformer (20Vac)
2. Phase power supply from transformer (20Vac)
3. Battery connection (positive pole).
4. Battery connection (negative pole).
5. Auxiliary output 24Vdc – 500mA (positive pole)
6. Auxiliary output 24Vdc – 500 mA (negative pole)
7. Connection of grounding

8. Output 1° electric motor 24Vdc (opening)
9. Output 1° electric motor 24Vdc (closing)
10. Output 2° electric motor 24Vdc (opening)
11. Output 2° electric motor 24Vdc (closing)
12. Output of electromagnetic lock
13. Common.
14. Blinking logic output (24V – 20W max.)
15. Output dial lamp – gate open (24V – 20W max.)

16. Signal input Encoder positioned on 1° motor.
17. Signal input Encoder positioned on 2° motor.
18. Electric contact normally opened by Pedestrian Command
19. Electric contact normally opened by Open/Close Command.
20. Electric contact normally closed by the photocell for the closing operation.
21. Electric contact normally closed by the photocell for the opening operation.
22. Electric contact normally closed by the Stop button.
23. Common.
24. 2nd output – radio channel (unpolarized contact)
25. 2nd output – radio channel (unpolarized contact)
26. Input antenna (braided wire).
27. Input antenna (signal).

Connections radio card (CONNECTOR MOLEX)

- A. Input antenna (signal).
- B. Input antenna (braided wire)
- C. Power supply receiver: 24V dc (negative pole)
- D. Power supply receiver: 24V (positive pole)
- E. Disconnected
- F. Disconnected
- G. 2nd input receiver channel
- H. 2nd input receiver channel
- I. 1st input receiver channel (parallel to input of Open/Close)
- J. 1st input receiver channel (parallel to input of Open/Close)



- **IT IS COMPULSORY POSITIONING THE EARTH WIRE CONNECTION (TERMINAL 7)**
- **N.C Contacts that are not used should be short circuited.**
- **N.O Contacts that are not used, should be left.**
- **Double insulated cables should be used when connected to low voltage devices.**
- **In order to follow the regulations of “ Low Safety Voltage” rule (EN 60335-1), the single insulated cables used for 230V supply should be equipped with additional insulation of**

at least 1 mm, and should be at least 4 mm from those with low voltage.

- **The cables used for power supply of motors, should be of at least 2.5 mm² and the length should not exceed 10 m;**

DEFINITIONS OF CONTROL UNIT PARTS

F1- FUSE TRANSFORMER INPUT(F10A, 250V):

protects the center in case of short circuits or faults that may emerge at the transformer input.

F2 – FUSE AUXILIARY OUTPUT (T1.6A, 250V): protects the center in case of short circuits and faults that may emerge in auxiliary devices.

F3 – FUSE BLINKER (T1.6 A, 250V): protects in case of short circuits and faults that may emerge in the blinker or in the control device of the opened gate.

DIP SWITCH FOR SELECTION OF FUNCTION MODES:

SW – 1 indicates torque of 1st motor (electric friction M1).

SW – 2 indicates torque of 2nd motor (electric friction M2).

SW – 3 indicates the operational sequence of the command Open/Close.

SW – 4 allows the set up of the function mode for automatic o semiautomatic.

SW – 5 allows the insertion “ battering ram” during the opening phase.

SW – 6 allows selection of delaying the second in respect to the first shutter.

SW – 7 allows selection of operating with 1 or 2 motors.

SW – 8 allows adjustment of the mains for automatic cycle and intervals.

LED – SIGNALLING:

DL2 – (RED): a Led which signals activation of the photocell in the closed mode; the LED automatically switches off when the photocell detects an obstruction during closing.

DL3 – (RED): a Led which signals activation of the photocell in the opened mode; the LED automatically switches off when the photocell detects an obstruction.

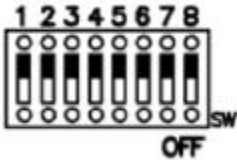
DL4 – (RED): a Led which signals blockade of the gate; the LED automatically switches off when the command Stop is activated.

DL5 – (RED): a Led which signals whether the central unit is plugged(on) or not(off); in the case of supply from the accumulator the LED switches off.

INPUTS/OUTPUTS DEFINITIONS

- **Input power supply from transformer** : 20V~ +/- 10%.
- **Input/ output accumulators** : 2 batteries in series from 12V – 3Ah
- **Auxiliary output** (24V $\overline{\text{---}}$, 500 mA max): used only for feeding safety devices and accessories.
- **Motors outputs** (24V $\overline{\text{---}}$, 120W): the motor connected to the terminals 8 - 9 (M1) starts first in the phase of opening; the motor connected to the terminals 10 -11 (M2) starts first in the phase of closing.
- **Electromagnetic lock output** : allows activation of the lock 1 second before the start of M1 motor.
- **Blinker output** (24V, 25W max): the unit allows to signal movement of the gate(blinking), the interval during the automatic operation (steady light for 3 seconds) and possible activation of the safety device during the same interval (blinking maximum 10 seconds); it signals also the subsequent opening or closing of the gate by means of pre-blinking for 1.5 seconds.
- **Control unit gate opened output** (24V, 5W max): activated just after receiving the command of opening and disabled when the gate is completely closed.
- **Encoder inputs**: they form the inputs for the signals coming from the Encoder placed on the 2 motors, enabling the measurement of the length traveled by the two leaves of the gate without the need of a limit-switch.
- **Pedestrian input**: enables the controlling of the opening and closing of only one (connected with M1 motor) shutter of the gate.
- **Open/Close input**: enables the sending of closing and opening commands of the gate according to the sequence that depends on the position of the dip switch SW-3.
- **Activated photocell in the closing mode input**: the activation of this input is disabled during the opening phase, stops and opens the gate during the closing and during the interval.
- **Activated photocell in the opening mode input**: the activation of this input causes, during the opening the gate, its immediate stop; if the photocell is deactivated, the gate starts the opening phase again.
- **Stop input**: if the Stop command is activated, all of the possible cycles and every starting command are disabled. The Stop command during the motion causes immediate stop of the gate. If the Stop command is given during the interval, the work cycle is interrupted until the new command of closing.
- **2nd radio channel output (unpolarized contact)**: by the means of using the 2 channel receiver, it is possible to control an external supplementary unit.
- **Antenna input**
- **Radio connector input (Molex connector)**: the unit is adapted to connect an accessory radio receiver card. The 1st card channel is connected parallel to the Open/Close input. The 2nd channel is connected in the terminals 24 – 25 (CH2)

FUNCTIONING MODES



The unit may control various functions based on the combinations of the Dip Switches:

| DIP | FUNCTION | ON | OFF |
|--------|------------------------|--|--|
| SW - 1 | ELECTRONIC FRICTION M1 | The motor M1 supplies the maximum thrust. | The motor M1 supplies the minimum thrust. |
| SW - 2 | ELECTRONIC FRICTION M2 | The motor M2 supplies the maximum thrust. | The motor M1 supplies the minimum thrust. |
| SW - 3 | COMMAND OPEN/CLOSE | impulse opens – impulse blocks – impulse closes | impulse opens – impulse closes |
| SW - 4 | AUTOMATIC CLOSING | The automatic operation is activated | The semi-automatic operation is activated |
| SW - 5 | BATTERING RAM | The M1 shutter is closed for a second to free the electric lock and then the opening restarts. | The opening phase is not provided for the use of the battering ram. |
| SW - 6 | SHUTTER DELAY | During the closing operation, the M1 shutter is activated after 3 seconds of the activation of the M2 shutter. | During the closing operation, the M1 shutter is activated after 7 seconds of the activation of the M2 shutter. |
| SW - 7 | FUNCTIONING ½ MOTORS | Activated two – motors operation mode. | Activated one– motor operation mode. |
| SW - 8 | AUTOMATIC LEARNING | Proceeds the operation of automatic learning of the shutter movements and bringing to automation the closing time. | The automatic learning phase is deactivated. |

PROGRAMMING

The programming of the central unit requires the following steps:

- Manual opening of the gate.
- Program SW - 8 = ON, the blinking unit will emit a steady light to inform the user that the programming procedure has been started.
- Press the Open/Close button or the radio control button once; the M2 shutter will close completely, followed, after 2 seconds, by the other one(M1). *If the shutters are activated in the opening phase, power supply should be cut off and invert the connections in the motors in order to enable proper programming.*
- After closing the two shutters, starts the opening phase(automatically), first activating the M1 shutter and then the M2 one until reaching the mechanical positive stops in the opening phase (the process of reaching the end points proceeds in slow motion).
- From the moment when the shutters have reached the mechanical stops in the opening phase, the counting of automatic closing time starts; when the requested time has passed, one should press once again the Open/ Close button or the radio control button, in order to control the closing of the gate.
- When the closing operation has come to an end, program SW - 8 = OFF;
- End of programming.

NOTE

1. **In order to secure always the safety of the automation and to enable the proper carrying out of the programming operation, it is necessary to use the mechanical positive stops at the end of the gate's course (in opening and in closing).**
2. The electric friction can be adjusted to make the two motors more or less sensitive to obstruction; if an obstruction is detected, in the opening or in the closing phase, the central unit, at first, reverses the course of the gate. If the obstruction is detected again, the central unit blocks the operation of the gate deactivating, if programmed, the process of automatic closing; it is necessary to give a new command. If the obstruction is detected for the third time, the central unit starts the emergency mode by opening the gate completely to the mechanical positive stops in the opening and then the gate closes automatically(if the automatic closing is programmed).
3. During the opening phase, with SW – 3 = OFF and with SW – 4 = ON, every Open/Close command(terminal 19) will be inactive, whereas during the closing phase the two-leaf movement is inverted with each impulse (CONDOMINIUM MODE). If the semi-automatic functioning is activated, with SW – 3 = OFF, every Open/Close command will cause the inversion of gate leaf movement, both during the opening and closing phase.
4. In the two-motor mode, the Open/Close command controls the activation of both gate leaves, whereas the pedestrian commands only the M1 gate leaf. Next, in the one – motor mode the Open/Close command causes the full activation of M1 gate leaf and the Pedestrian command is partly active.
5. The Open/Close command, after the power supply is cut or reset(by touching the two Pins marked as RST with the screwdriver point), provokes first the complete opening of the gate, and then the automatic closing up to the proper mechanical positive stops.
6. During the regular mode, the central unit blocks the gate leaves a few centimeters before the end point in the opening, in order to avoid striking the mechanical stops.